

PROFFERED PAPER PP31.2

**Presented at the 2004 Annual Scientific Meeting & Exhibition of
The Australian Society for Microbiology, Sydney.**

***Legionella* isolations within three interconnected cooling tower
systems - a five year study**

Sofroni Eglezos¹, Gordon Gudgeon¹, Bixing Huang², Ed Stuttard¹

¹EML Consulting Services QLD, Tennyson, Australia

²Queensland Health Scientific Services, Coopers Plains, Australia.

Legionella monitoring is an essential tool in performance based microbial control of cooling water systems. According to AS3666.3(2000), drawing of a monthly sample 'is presently the most direct means of assessing the effectiveness of maintenance regimes on the multiplication of legionellae'. In spite of a growing body of evidence, interconnected cooling tower systems (those made up of multiple cooling towers sharing recirculated water), continue to be managed based on microbiological assessment of single grab samples. *Legionella* isolations within three interconnected cooling tower systems composed of two, four and five cooling towers respectively, have been monitored over a period of five years. Analysis was performed by NATA accredited laboratories by means of AS3896 (1998). A total of forty three *Legionella* events (periods during which a cooling tower system yielded a culture greater than or equal to 10cfu/mL) were noted. Of these, 72% were single tower isolations, namely isolations not replicated in the adjoining towers. A non uniform cooling tower distribution of *Legionella pneumophila* serogroup 1, *Legionella pneumophila* serogroup 2-14, and non-*pneumophila* *Legionella* species was noted in 21% of events. Only in 7% of events did all towers present with *Legionella* isolations. Of these isolations, only 2% of systems were within result ranges signifying uniform *Legionella* control strategies for each tower. The findings of this study add to the body of evidence that cooling towers within an interconnected system exhibit a great deal of disparity in *Legionella* load, and correct risk management procedures require each tower to be managed as a discrete unit.